REMARKS

Claims 1-20 are pending in the present application. In the Office Action mailed August 24, 2004, the Examiner rejected claims 1-20 under 35 U.S.C. §102(e) as being anticipated by Chapman (USP 6,697,507).

Chapman is directed to a ghost artifact reduction technique that analyzes sampled data to determine a correction without the acquisition of additional data. As shown in Figs. 2-3, Chapman teaches a linear k-space sampling scheme wherein parallel lines of k-space are filled with each echo. Specifically, "FIG. 2 illustrates the characteristic, alternate sweeping back and forth, sampling of k-space trajectory of the standard blipped EPI sequence." Col. 6, lns. 39-41. "FIGS. 3 (a and b) show EPI sample points displaced relative to the true phase encode axis which passes through the centre of k-space where all spins align." *Id.*, lns. 42-44.

Chapman, in the text corresponding to the description of Fig. 2, teaches that "[b]y employing phase encoding increments during rapid switching of the read encoding, the sampling sweeps back and forth across k-space, as shown in FIG. 2." Col. 7, lns. 37-39. Chapman further teaches that "the signal evolution proceeds in an opposite sense in time in alternate k-space lines, resulting in alternate lines in the sampled data being time reversed." *Id.*, lns. 19-24. Chapman terms the forward lines as odd lines of k-space and the reverse lines as even lines of k-space. See Id. at lns. 24-26. In short, "the sampled data is first split into odd and even data sets for each segment." Col. 12, lns. 43-45.

In contrast, the claimed invention, as defined by claim 1, is directed to diffusion weighted MR imaging whereby MR data acquisition is split into non-parallel odd and even echo acquisition blades for each echo train. For each echo train, the odd and even acquisition blades are rotated about an origin point with respect to a previous acquisition. The data collected from each odd and even data acquisition blades is the combined into a composite set of MR data for reconstruction.

One skilled in the art will readily appreciate that there are a number of distinctions between that claimed and that taught by Chapman. For example, claim 1 calls for non-parallel odd and even echo acquisition blades. As shown if Figs. 2-3 and 10-11, Chapman teaches parallel acquisition segments. Specifically, Chapman explicitly teaches odd lines of k-space that are parallel to even lines of k-space. That is, Chapman teaches the acquisition of forward (odd) lines followed by the acquisition in a reverse order of reverse (even) lines. Chapman neither teaches nor suggests that the odd lines of k-space are anything but parallel to the even lines of k-space.

Additionally, the present invention claims the rotation of the odd and even acquisition blades about an origin point with respect to a previous acquisition whereby each blade extends through an origin point. Applicant does not disagree that Chapman teaches a forward-reverse acquisition, but such an acquisition is not equivalent to a rotation about an origin of k-space. More particularly, Chapman teaches a linear filling of k-space whereby k-space lines are filled sequentially; not centered about a central point or origin or arranged in such a manner that each blade extends through the center of k-space.

Accordingly, Applicant respectfully believes that Chapman fails to teach or suggest a method of diffusion weighted MR imaging that includes the steps of, for each echo train, splitting MR data acquisition into non-parallel odd and even echo acquisition blades, for each echo train, rotating the odd and even acquisition blades of data acquisition about an origin point with respect to a previous acquisition, and combining data collected from each odd and even data acquisition blades into a composite set of MR data for reconstruction.

Applicant likewise believes that Chapman fails to teach or suggest an MRI apparatus having a magnetic resonance imaging (MRI) system having a plurality of gradient coils positioned about a bore of a magnet to impress a polarizing magnetic field and an RF transceiver system and an RF switch controlled by a pulse module to transmit RF signals to an RF coil assembly to acquire MR images, and a computer programmed to segment acquisition of each echo train into an odd section and an even section, wherein each odd and even section extends through an origin point, acquire a segment of MR data, rotate each segmented acquisition a prescribed interval about the origin point for each subsequent acquisition, combine MR data from corresponding odd and even sections into a composite set of MR data, and reconstruct an image from the composite set.

Similarly, Chapman fails to teach or suggest a computer readable storage medium having stored thereon a computer program comprising instructions which when executed by a computer cause the computer to, for each echo train, segment data acquisition into an odd data acquisition and even data acquisition, associate a strip of k-space extending through a center of k-space for each data acquisition, rotate the strip of k-space for the odd data acquisition and the even data acquisition for each subsequent echo train, and combine parallel strips of data collected for each odd and even acquisition into a composite set of MR data for image reconstruction.

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1-20.

Applicant appreciates the Examiner's consideration of these Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,

J. Mark Wilkinson
Registration No. 48,865
Direct Dial 262-376-5016
jmw@zpspatents.com

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P.O. ADDRESS:
Ziolkowski Patent Solutions Group, LLC
14135 North Cedarburg Road
Mequon, WI 53097-1416
262-376-5170